

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Application of : Ayala BARAK  
Appl. No.: 10/586,349 : Group Art Unit: 1616  
Filed : April 10, 2007 : Examiner: Nathan Schlientz  
Confirmation No. : 2789 :  
For : BIOCIDES AND APPARATUS

DECLARATION OF AYALA BARAK UNDER 37 C.F.R. §1.132

I, the undersigned, Dr. Ayala Barak, of 11 Be'eri Street, Tel Aviv, Israel, hereby declare as follows:

1. I am the Applicant in U.S. Patent Application No. 10/586,349 (hereinafter "the application").
2. I have been employed as a professional in the field of disinfection of industrial water for 25 years. I am currently employed as CEO at A.Y. Laboratories, the assignee of the application. I have a Ph.D. degree in chemistry from the Hebrew University of Jerusalem.
3. In the Office Action dated October 25, 2012, the Examiner states that WO 2005/19117 (hereinafter "Shim") discloses a method for controlling microbial fouling comprising adding a chlorine oxidant, a sulfamate source and a bromide ion to an aqueous system. However, as will be discussed below, Shim does not disclose the method of the presently claimed invention.
4. Shim discloses a method wherein three components, chlorine oxidant, sulfamate and bromide, are added separately to water to be treated. This is exemplified in Example 5, the only field experiment disclosed in Shim. Claim 3 of Shim recites that either all three components are added separately, or that sulfamate and bromide are pre-mixed. There is no suggestion in Shim that pre-

In Re: USSN 10/586,349  
Group Art Unit 1616  
Rule 132 Declaration of Ayala Barak, cont'd

mixing sulfamate and hypochlorite was contemplated. In the paragraph on page 13, lines 4 – 13 of Shim, it is stated that a feature of the invention disclosed therein is that hypochlorite is added separately from sulfamate and bromide.

5. On the other hand, claim 95 of the application recites a method comprising mixing an ammonium salt (e.g. ammonium sulfamate) and a hypochlorite oxidant to form a biocide and then applying the biocide to a medium. Pre-mixing of the ammonium salt and the hypochlorite before applying them to the medium is an essential feature of the invention.

6. As shown in Shim, when hypochlorite and sulfamate are added to process water, the resulting compound is chlorosulfamate. Indeed, this method of producing chlorosulfamate has been known for decades. However, in the present application, the active compound to be produced is chloroammonium, which is very different than chlorosulfamate. Chloroammonium will only be produced by the specific method recited in the claims of the application, including pre-mixing of the ammonium salt and the hypochlorite.

7. Furthermore, in the present invention, the active compound is specifically a salt comprising chloroammonium and an anion comprising an oxidizable nitrogen. This feature is also an essential feature of the invention. The oxidizable nitrogen on the anion acts as a reducing agent for the chlorine of the chloroammonium, weakening the Cl-N bond and thus improving the biocidal activity.

8. Since Shim discloses that the active ingredient is chlorosulfamate, there is no motivation for a person of skill in the art to alter the method disclosed in Shim, which is a known method for producing chlorosulfamate, by pre-mixing the components. Additionally, since Shim discloses that the sulfamate source can be

any sulfamate salt, with the sodium and calcium salts specifically disclosed, there could be no motivation to try to create an alternative active ingredient by chlorinating the cation, since sodium and calcium cannot be chlorinated.

9. US 5,976,386 (hereinafter "Barak") also provides no motivation to alter the method disclosed in Shim. The only motivation to alter the method of Shim based on Barak would be to form chloroammonium, which has higher activity, as discussed above. However, this property of chloroammonium was not known before the present invention and could not be assumed based on Barak and/or Shim. Therefore, a person of skill in the art upon reading Barak and Shim would find no reason to modify Shim in view of Barak. Furthermore, since Shim was filed eight years after the first publication of Barak as WO 96/10541, had it been obvious to alter Shim to pre-mix the ingredients, Shim himself would have done so.

10. Another reason for not altering Shim to premix the ingredients is that Shim requires the presence of free bromide in the process water. Shim discloses that when bromide is pre-mixed with hypochlorite, no bromide is detected in the system (page 9, lines 13 – 19). This is because under these conditions the bromide is quickly converted to hypobromite. Shim further discloses that it is the free bromide ion, which results from separate addition of the ingredients into the water, that penetrates the biofilm and reacts therein with chlorosulfamate to form bromosulfamate, which causes detachment of the biofilm. Thus, Shim discourages a person of skill in the art to try to pre-mix the ingredients.

11. In summary, Shim discloses a method wherein the ingredients of the biocide are, and must be, added separately to the process water. A person of skill in the art, upon reading Shim and Barak, could not and would not modify the method of Shim to pre-mix the ingredients and thus arrive at the present

In Re: USSN 10/586,349  
Group Art Unit 1616  
Rule 132 Declaration of Ayala Barak, cont'd

invention, for the reasons discussed above.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that any such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1 92 12c  
Ayala Barak, Citizen of Israel  
11 Be'eri Street, Tel Aviv, Israel  
March 12, 2012